

Claims:

1. A context aware call handling system comprising:
  - a shared database;
  - 5 a communication network;
  - a user interface for setting user preference call handling rules; and
  - an application level for making assertions to said shared database relating to current user context and incoming call information from a caller over said communication network, and in response handling said incoming call by applying said user preference call
  - 10 handling rules based on said user context and said call information.
2. A system as claimed in claim 1, wherein said application level further comprises a plurality of server modules and client modules for performing knowledge management and agent services, including:
  - 15 a user knowledge management module for setting said current user context and said user preference call handling rules as assertions in said shared database;
  - a client agent services module for receiving a notification of said incoming call from said communication network and in response generating agent processing requests as assertions in said shared database;
  - 20 a system knowledge management module having a context set sub-module for administrator creation and modification of context hierarchy; and
  - a server agent services module for receiving said agent processing requests via said shared database and in response assigning at least one relationship between said user and said caller, retrieving said at least one relationship between the user and said caller and
  - 25 said current user context, and selecting a single one of said user preference call handling rules based on said relationship.
3. A system as claimed in claim 2, wherein said user knowledge management module further includes a buddy-list set sub-module for user creation and maintenance of a list
- 30 containing information about individuals and relationships between said individuals and said user, a relationship set sub-module for user definition of a relationship hierarchy between said individuals and said user, a schedule set sub-module for user schedule setting, and a user-rule set sub-module for user setting of preferences for call handling based on one or more of said buddy-list, relationship hierarchy, and schedule.

4. A system as claimed in claim 3, wherein said client agent services module further includes a call delivery (CD) agent for receiving notification from said communication network of said incoming call and in response generating a request for call processing, and a system management (SM) agent for receiving said request for call processing and in response generating said agent processing requests.

5. A system as claimed in claim 4, wherein said server agent services module further includes a relationship assigning (RA) agent for assigning said at least one relationship between said user and said caller according to said buddy-list, a user rule assigning (URA) agent for retrieving said at least one relationship between the user and said caller and said current user context, and a user conflict resolving (UCR) agent for responding to said system management (SM) agent with said single one of said user preference call handling rules based on said at least one relationship.

6. A system as claimed in claim 5, wherein said user conflict resolving (UCR) agent selects as said single rule one of either:  
a most specific one of said user preference call handling rules having more conditions than other ones of said rules, in the event that said rules have different numbers of conditions;  
one of said user preference call handling rules having more specific conditions than other ones of said rules, in the event that said rules have identical numbers of conditions;  
a most recently created one of said rules; or  
a randomly selected one of said rules.

7. A system as claimed in any one of claims 1 to 6, further including a gateway between said call delivery (CD) agent and said communication network.

8. A system as claimed in claim 7, wherein said communication network is a PBX connected to the public switched telephone network (PSTN).

9. A system as claimed in any one of claims 1 to 8, wherein said user interface includes windows for login, user preference rule setting, context setting and message display.

10. A system as claimed in any one of claims 1 to 9, further including an event handler between said user interface and said application level for directing events from said user interface to appropriate modules of said application level.

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11. A system as claimed in any one of claims 1 to 10 wherein said shared database is a tuple space and said assertions are tuples.

12. A context aware call handling method according to user preference call handling  
10 rules, comprising:

receiving an incoming call from a caller to a user;  
monitoring current context of said user; and  
applying said user preference call handling rules based on said user context and  
15 said call information.

13. A method as claimed in claim 12, further comprising user setting of at least one caller relationship to said user, and application of said user preference call handling rules based further on said at least one caller relationship.

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14. A method as claimed in claim 12 or claim 13, further comprising:  
setting said current user context and said user preference call handling rules as  
tuples in a tuple space;  
receiving a notification of said incoming call and in response generating agent  
25 processing requests as tuples in said tuple space; and  
receiving said agent processing requests via said tuple space and in response  
assigning at least one relationship between said user and said caller, retrieving said  
relationship between the user and said caller and said current user context, and selecting a  
single one of said user preference call handling rules based on said relationship.

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15. A method as claimed in claim 14, further comprising:  
user creation and maintenance of a list containing information about individuals  
and relationships between said individuals and said user;  
user definition of a relationship hierarchy between said individuals and said user;

user schedule setting;

user setting of preferences for call handling based on one or more of said buddy-list, relationship hierarchy, and schedule.

5    16.    A method as claimed in claim 14 or claim 15, wherein said step of selecting said single one of said user preference call handling rules further comprises selecting as said single rule one of either:

         a most specific one of said user preference call handling rules having more conditions than other ones of said rules, in the event that said rules have different numbers  
10   of conditions;

         one of said user preference call handling rules having a more specific conditions than other ones of said rules, in the event that said rules have identical numbers of conditions; and otherwise

         a most recently created one of said rules.

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17.    A system as claimed in claim 1 and substantially as hereinbefore described with reference to or as illustrated in the accompanying Figures 1 to 31 inclusive.

18.    A method as claimed in claim 12 and substantially as hereinbefore described with  
20   reference to or as illustrated in the accompanying Figures 1 to 31 inclusive.